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09/718,008	11/21/2000	Kenneth Perlin	KPER-4	9323

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EXAMINER	
WANG, JIN CHENG	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/718,008	Applicant(s) PERLIN, KENNETH
	Examiner JIN-CHENG WANG	Art Unit 2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 11/02/2009 has been entered. Claims 1-12 have been canceled. Claims 13-16 have been newly added. Claims 13-16 are pending in the application.

Response to Arguments

Applicant's arguments filed November 2, 2009 have been fully considered but are moot in view of the 112 rejection and 102(b) rejection based on Ebert, D. et al., July 1998, "Texturing and Modeling; A Procedural Approach", Second Edition. AP Professional, Cambridge, pp. 209-274 (hereinafter Ebert et al.).

Claims 13-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, applicant speculates "producing the images with texture that do not have visible grid artifacts with the computer using a bit-manipulation to generate a six bit-manipulation to generate a six bit quantity from an integer lattice point i, j, k", set forth in the claim 13. However, Applicant's Specification discloses six eight-bit quantities i, j, k, u, v, w, as opposed to a six bit quantity, and computing eight five bit hash values (Specification at Pages 9-10). Applicant's Specification failed to describe any six-bit quantity.

Ebert discloses an algorithm in Page 214-218 including the 3-dimensional evaluation of one x, y, z triplet to produce the images with texture in real time. This same 3D evaluation requires only one pipelined clock cycle to produce the images with texture in real time. Since the cited reference teaches the identical functionality, each 3 dimensional evaluation of one x, y, z triplet requires the identical clock time to produce the images with texture in real time when such evaluation is implemented on the same pipeline. Such simple 3D evaluation of one x, y and z triplet would require less than one clock time in a modern computer to produce the images with texture in real time. Computing the textures based on these simple steps, especially the 3D evaluation of one x, y and z triplet, does not require complex computation and thus can be performed in real time. Moreover, Applicant's claim limitation is related the computational speed relative to the speed of a processor for implementing the method. The modern processor runs much faster than the old processor. For example, when the same method is implemented in an old processor (e.g., a 486 Intel Processor), it may take hours or seconds to perform texture computation wherein precisely all steps set forth in the specification are implemented. However, it may take milliseconds to perform texture computation in a modern processor for the same method (e.g., an Intel Pentium II Processor).

It is readily concluded that the execution speed for the same evaluations of the cited prior art versus the claimed subject matter require the same pipelined clock time to produce the images with texture in real time, relative to the same speed of the microprocessor for implementing the method steps. Moreover, the C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet to produce the images with texture in real time. When each 3 dimensional evaluation of one x, y, z triplet for the prior art is exactly the same as each 3

dimensional evaluation of one x, y, z triplet, the pipelined clock time for each such evaluation by the cited prior art is equal to the pipelined clock time for each evaluation to produce the images with texture in real time. Moreover, it is noted that the C implementation of the cited reference is very efficient, each 3 dimensional evaluation of one x, y, z triplet is so simple that it only requires one clock cycle or maybe less than one block cycle, for example, the C code implemented on the Intel optimizing compiler running on a Pentium 2 or 3 computer such that the images with texture are produced in real time.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 13-16 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101"). The instant claims neither transform underlying subject

matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. The steps of claim 13 include instructions which are merely descriptive material without reaching a final result as being useful, concrete and tangible. Using different elements/instructions to perform the method steps does not mean that any hardware is *physically* transformed to a different state or thing. For instance, the involvement of a general computer in a token recitation of texture in a computer image by no means imply any physical transformation in the method steps. The recitation of a display (as an abstract display as opposed to a display device) in the step of displaying the images on a display is merely an abstract idea and even if displaying the image on a display device is recited, it represents merely an insignificant extra-solution activity. *Comiskey*, 499 F.3d at 1380 (citing *In re Grams*, 888 F.2d 835, 839-840) (Fed. Cir. 1989). *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008). *In re Abele and Marshall*, 214 USPQ 682 (C.C.P.A. 1982). *Ex parte Halligan*, 89 USPQ2d 1355, U.S. Patent and Trademark Office Appeal No. 2008-1588. *Ex parte Jakobsson*, 84 USPQ2d 1511, U.S. Patent and Trademark Office Appeal No. 2006-2107, Decided April 16, 2007. *Ex parte Cornea-Hasegan*, 89 USPQ2d 1557 (Bd. Pat. App. & Int. 2009). *Ex parte Langemyr*, 89 USPQ2d 1988, U.S. Patent and Trademark Office Appeal No. 2008-1495.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, applicant speculates “producing the images with texture that do not have visible grid artifacts with the computer using a bit-manipulation to generate a six bit-manipulation to generate a six bit quantity from an integer lattice point i, j, k", set forth in the claim 13. However, Applicant’s Specification discloses six eight-bit quantities i, j, k, u, v, w, as opposed to a six bit quantity, and computing eight five bit hash values (Specification at Pages 9-10). Applicant’s Specification failed to describe any six-bit quantity.

Claims 14-16 depend upon the claim 13 and are rejected due to their dependency on the claim 13.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, applicant speculates “producing the images with texture that do not have visible grid artifacts with the computer using a bit-manipulation to generate a six bit-manipulation to generate a six bit quantity from an integer lattice point i, j, k", set forth in the claim 13. However, Applicant’s Specification discloses six eight-bit quantities i, j, k, u, v, w, as opposed to a six bit quantity, and computing eight five bit hash values (Specification at Pages 9-10). Applicant’s Specification failed to describe any six-bit quantity. Applicant thus failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 14-16 depend upon the claim 13 and are rejected due to their dependency on the claim 13.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebert, D. et al., July 1998, “Texturing and Modeling; A Procedural Approach”, Second Edition. AP Professional, Cambridge, pp. 209-274 (hereinafter Ebert et al.).

2. Re Claim 13:

Ebert et al. including Perlin, the inventor, the prior art under 102(b), has disclosed an improved Perlin Noise set forth in applicant's specification. The cited reference discloses a method for creating an appearance of texture in a computer image (see e.g., figures 11-14) comprising the steps of:

Introducing information into a computer from which the images are produced (*the C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet as the same 3D evaluation is taught in the cited prior art. See Page 232-240 for computing the computer textures; for the same reasons set forth above, the images of computer textures are computed in real time because the method steps are taught by the cited references*);

Producing the images with texture that do not have visible grid artifacts with the computer using a bit-manipulation to generate a six bit quantity from an integer lattice point i, j, k (*At Page 213-218 the cited reference discloses a point [x, y, z], a point [i, j, k] and [u, v, w]*. At *Page 214-218 the cited references discloses mapping lattice points [i, j, k] to indices of G, pre-computing a random permutation table P and using this table to fold [i, j, k] into a single n. It also discloses computing the <u>gradients</u> G[P[P[P[I]+j]+k]] wherein the precomputed arrays P and G contain a pseudo-random permutation and pseudo-random unit-length <u>gradient vectors</u> wherein the successive application of P hashes each lattice point to de-correlate the indices into G. The eight linear functions G(x-i, y-j, z-k) are then trilinearly interpolated using the cubic approximation, Page 216*);

Generating a gradient direction using the six bit quantity (*At Page 213-218 the cited reference discloses a point [x, y, z], a point [i, j, k] and [u, v, w]. At Page 214-218 the cited*

references discloses mapping lattice points [i, j, k] to indices of G, pre-computing a random permutation table P and using this table to fold [i, j, k] into a single n. It also discloses computing the <u>*gradients*</u> *G[P[P[P[I]+j]+k]] wherein the precomputed arrays P and G contain a pseudo-random permutation and pseudo-random unit-length* <u>*gradient vectors*</u> *wherein the successive application of P hashes each lattice point to de-correlate the indices into G. The eight linear functions G(x-i, y-j, z-k) are then trilinearly interpolated using the cubic approximation, Page 216*);

Displaying the image on a display (*Page 214-218 of the cited references discloses mapping lattice points [i, j, k] to indices of G, pre-computing a random permutation table P and using this table to fold [i, j, k] into a single n. It also discloses computing the gradients G[P[P[P[I]+j]+k]] wherein the precomputed arrays P and G contain a pseudo-random permutation and pseudo-random unit-length gradient vectors wherein the successive application of P hashes each lattice point to de-correlate the indices into G. The eight linear functions G(x-i, y-j, z-k) are then trilinearly interpolated using the cubic approximation, Page 216. The cited reference discloses an algorithm in Page 214-218 including the 3-dimensional evaluation of one x, y, z triplet. Since the cited reference teaches the identical functionality, thus each 3 dimensional evaluation of one x, y, z triplet requires the identical CPU time when such evaluation is implemented on the same computer. It is readily concluded that the execution speed for the same evaluations of the prior art versus what is claimed require the same CPU time, e.g., on a computer having the same CPU speed. Moreover, the C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet and therefore meets the claimed element of "each 3D evaluation of one x, y, z triplet requires only one pipelined clock cycle" as*

the same 3D evaluation is taught in the cited prior art. When each 3 dimensional evaluation of one x, y, z triplet for the prior art is exactly the same as each 3 dimensional evaluation of one x, y, z triplet as claimed, the CPU time for each such evaluation by the prior art is equal to the CPU time for each evaluation as claimed. Moreover, it is noted that the C implementation of the cited reference is very efficient, each 3 dimensional evaluation of one x, y, z triplet requires only one clock cycle, for example, the C code implemented on the Intel optimizing compiler running on a Pentium 2 or 3 computer. The C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet as the same 3D evaluation is taught in the cited prior art. See Page 232-240 for computing the computer textures; for the same reasons set forth above, the images of computer textures are computed in real time because the method steps are taught by the cited references).

Claim 14:

Ebert further teaches the claim limitation of producing the images with texture in real time (*Page 214-218 of the cited references discloses mapping lattice points [i, j, k] to indices of G, pre-computing a random permutation table P and using this table to fold [i, j, k] into a single n. It also discloses computing the gradients G[P[P[P[I]+j]+k]] wherein the precomputed arrays P and G contain a pseudo-random permutation and pseudo-random unit-length gradient vectors wherein the successive application of P hashes each lattice point to de-correlate the indices into G. The eight linear functions G(x-i, y-j, z-k) are then trilinearly interpolated using the cubic approximation, Page 216. The cited reference discloses an algorithm in Page 214-218 including the 3-dimensional evaluation of one x, y, z triplet to produce images with texture in real time. Since the cited reference teaches the identical functionality, thus each 3 dimensional evaluation*

of one x, y, z triplet requires the identical CPU time when such evaluation is implemented on the same computer to produce images with textures in real time. It is readily concluded that the execution speed for the same evaluations of the prior art versus what is claimed require the same CPU time, e.g., on a computer having the same CPU speed. Moreover, the C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet to produce the images with texture in real time. When each 3 dimensional evaluation of one x, y, z triplet for the prior art is exactly the same as each 3 dimensional evaluation of one x, y, z triplet in the prior art to produce the images with textures in real time, the CPU time for each such evaluation by the prior art is equal to the CPU time for each evaluation of the claim invention. Moreover, it is noted that the C implementation of the cited reference is very efficient, each 3 dimensional evaluation of one x, y, z triplet requires only one clock cycle such that the images with texture are produced in real time, for example, the C code implemented on the Intel optimizing compiler running on a Pentium 2 or 3 computer. The C-codes disclosed in Pages 214-218 include each 3 dimensional evaluation of one x, y, z triplet as the same 3D evaluation is taught in the cited prior art such that the images with textures are produced in real time. See Page 232-240 for computing the computer textures; for the same reasons set forth above, the images of computer textures are computed in real time because the method steps are taught by the cited references).

Claim 15:

Ebert further teaches the claim limitation of producing the images with texture based on pseudo-fractal sum (Page 226-229 and Page 232).

Claim 16:

Ebert further teaches the claim limitation of producing the images with texture based on a sine function (Page 216 and Page 229-230 and Page 239-241).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JIN-CHENG WANG whose telephone number is (571)272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jin-Cheng Wang/
Primary Examiner, Art Unit 2628